Amendments to the Specification:

Please replace the paragraph beginning on page 32, line 28, with the following rewritten paragraph:

Examples of acceptable inorganic liquid-state matrix materials include, for example, water, water glass (a thick water solution of alkaline silicate), hydrochloric acid, sulfuric acid, nitric acid, aquaregia, chlorsulfonic acid, methanesulfonic acid, and trifluoromethansulfonic acid. Examples of acceptable organic solvents include, specifically, alcohols such as methanol, ethanol, isopropyl alcohol, n-butanol, amyl alcohol, cyclohexanol, bnzyl alcohol; polyatomic alcohols such as ethylene glycol, diethylene glycol, glycerin, etc.; esters such as ethyl acetate, n-butyl acetate, amyl acetate, isopropyl acetate, etc.; ketones such as acetone, methylethylketone, methylisobutylketone, cyclohexanone, etc; ethers such as diethyl ether, dibutyl ether, methoxy ethanol, ethoxy ethanol, buthoxy ethanol, carbithol, etc.; cyclic ethers such as tetrahydrofuran, 1, 4-dioxan, 1, 3-dioxoran, etc.; hydrocarbon halides such as dichloromethan, chroloform, carbon tetrachloride, 1, 2-dichloroethane, 1, 1, 2-trichloroethane, trichlene, bromoform, dibromomethane, diiodomethan, etc.; aromatic hydrocarbons such as benzene, toluene, xylene, chlorobenzene, o-dichlorobenzene, nitrobenzene, anisole, α-chloronaphthalene, etc.; aliphatic hydrocarbons such as n-pentane, n-hexane, ~~n-pentane~~n-heptane, cyclohexane, etc.; amides such as N, N-dimethylformamide, N, N-dimethylacetamide, hexamethylphosphorictriamide, etc.; cyclic amides such as N-methylpyrrolidone, etc.; urea derivatives such as tetramethylurea, 1, 3-dimethyl-2-imidazolidinone, etc.; sulfoxides such as dimethylsulfoxide, etc.; ester carbonates such as propylene carbonate, etc; nitriles such as acetonitrile, propionitrile, benzonitrile, etc.; nitrogen-containing heterocyclic compounds such as pyridine, quinoline, etc.; amines such as triethylamine, triethanolamine, diethylaminoalcohol, aniline, etc.; organic acids such as

chloracetic acid, trichloracetic acid, trifluoroacetic acid, acetic acid, etc.; and, in addition, such solvents as nitromethane, carbon disulfide, sulfolan, etc. A plurality of these solvents can be used also in combination.

Please replace the paragraph beginning on page 51, line 14, with the following rewritten paragraph:

A material having larger heat conductivity than that of the light-absorbing layer film is preferable as the material of the heat-conducting layer film, and any material can be used when the material transmits the control light beam and the signal light beam and does not react with the materials of the light-absorbing layer film and the heat-insulating layer film. Examples of usable materials having high heat-conductivity and small light absorption in wavelength bands in the visible spectrum include, for example, diamond [having a heat conductivity of 900W/mK at 300K], sapphire [having a heat conductivity of 46W/mK at 300K], a single quartz crystal [having a heat conductivity of 10.4W/mK at 300K in a direction parallel to c-axis], quartz glass [having a heat conductivity of 1.38W/mK at 300K], hard glass [having a heat conductivity of ~~1.10E/mK~~ 1.10W/mk at 300K], etc.

Please replace the paragraph beginning on page 64, line 28, with the following rewritten paragraph:

In the optically controlled optical-path-switching-type optical signal transmission apparatus and the optical signal optical path switching method of the present invention, the signal light beam and the control light beam are converged by the condenser lens and irradiated such that these light beams focus in the thermal lens forming device. However,

when the light beams exiting from the thermal lens forming device at a divergence angle larger than the ordinary divergence angle are received by a light-receiving lens and are collimated into parallel light beams, it is preferable that the numerical aperture (hereinafter, referred to as "NA") of the light-receiving lens be set at an NA larger than the NA of the ~~light-receiving lens~~ condenser lens. In addition, it is preferable that the NA of the light receiving lens equals to or exceeds an NA twice as large as the NA of the ~~light-receiving lens~~ condenser lens. However, when the effective aperture radius a is larger than the beam radius ω of the beam entering the condenser lens (i.e., $a/\omega>1$), the substantial numerical aperture of the condenser lens is smaller than the numerical aperture of the condenser lens. Therefore, it is preferable that the numerical aperture of the light-receiving lens is set to be larger than the substantial numerical aperture of the condenser lens but the numerical aperture of the condenser lens and to be equal to or larger than a numerical aperture twice as large as the substantial numerical aperture of the condenser lens. By setting the NA of the light-receiving lens to be equal or larger than an NA twice as large as the NA of the condenser lens, the signal light beam can be received without any loss even when the beam diameter of the signal light beam is expanded to a diameter equal to or exceeding a diameter twice as large as the diameter thereof at the time when the signal light beam enters the thermal lens forming device.

Please replace the paragraph beginning on page 73, line 26, with the following rewritten paragraph:

In this example, although an example planar-illumination-type semiconductor laser that can be modulated at 2.5GHz and has an oscillation ~~frequency~~ wavelength of 850nm is used as the light source 20 of the signal light beam 120, a semiconductor laser ~~light beam~~

beam that has oscillation ~~frequencies~~ wavelengths of 1350nm and 1550nm and can be modulated at an ultra high speed may also be used. In addition, these signal light beams having a plurality of wavelengths may be used simultaneously. In the example, a second order harmonic of a semiconductor-excited Nd:YAG laser having an oscillation frequency of 532nm, semiconductor lasers having respectively wavelengths of 670nm and 800nm are respectively used as the control light beam light sources 21, 22, and 23 for irradiating the control light beams 121, 122, and 123 to cause each of the thermal lens forming devices 1, 2, and 3 to form a thermal lens, and switching of the signal light beam paths is carried out by turning on and off of the control light beams. The control light beams 121, 122, and 123 are beam-shaped and used such that any one of the beams becomes a parallel light beam having a beam radius of 4.5mm. The laser power of the control light beam light source is 2 to 10mW before any one of the condenser lenses 31, 32, and 33.